# DEVELOPMENT OF MICROENCAPSULATION TECHNIQUES

DR. JOHN D. BALDESCHWIELER

NOVEMBER 26, 1986



U. S. ARMY RESEARCH OFFICE

GRANT NUMBER DAAG29-83-K-0128

CALIFORNIA INSTITUTE OF TECHNOLOGY
PASADENA, CALIFORNIA 91125

MASTER COPY - FOR REPRODUCTION PURPOSES

UNCLASSIFIED
SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

AD-A185 019

| REPORT DOCUMENTATION PAGE | | READ INSTRUCTIONS BEFORE COMPLETING FORM |
|---|---|---|
| 1. REPORT NUMBER<br>ARO 20030.1-CH | 2. GOVT ACCESSION NO.<br>N/A | 3. RECIPIENT'S CATALOG NUMBER<br>N/A |
| 4. TITLE (and Subtitle)<br>Development of Microencapsulation Techniques | | 5. TYPE OF REPORT & PERIOD COVERED<br>Final 9/1/83-8/31/86 |
| | | 6. PERFORMING ORG. REPORT NUMBER |
| 7. AUTHOR(s)<br>Dr. John D. Baldeschwieler | | 8. CONTRACT OR GRANT NUMBER(s)<br>DAAG29-83-K-0128 |
| 9. PERFORMING ORGANIZATION NAME AND ADDRESS<br>California Institute of Technology<br>1201 E. California Blvd.<br>Pasadena, California 91125 | | 10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS |
| 11. CONTROLLING OFFICE NAME AND ADDRESS<br>U. S. Army Research Office<br>Post Office Box 12211<br>Research Triangle Park, NC 27709 | | 12. REPORT DATE<br>11/26/86<br>13. NUMBER OF PAGES |
| 14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) | | 15. SECURITY CLASS. (of this report)<br>Unclassified<br>15a. DECLASSIFICATION/DOWNGRADING SCHEDULE |

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; distribution unlimited.

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

NA

18. SUPPLEMENTARY NOTES

The view, opinions, and/or findings contained in this report are those of the author(s) and should not be construed as an official Department of the Army position, policy, or decision, unless so designated by other documentation.

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Phospholipid vesicles
Polymerizable phospholipids
Spontaneous vesicle formation
Liposome

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

When vesicles are formed using phospholipids containing terminal sulfhydryl groups it is possible to polymerize the sulfhydryl groups by oxidation to form disulfide linkages. Such cross-links lead to a considerable enhancement in vesicle stability for a given size. An important feature of the sulfhydryl system is that this type of phospholipid polymer can be readily depolymerized by reducing agents. We have also found formulations which result in spontaneous formation of vesicle structures. Spontaneous vesicle formation reduces many of the difficulties involved in vesicle preparation. Certain combinations of short

20. Abstract (continued)

and long chain lipids give rise to spontaneous vesicle formation. We are currently exploring whether this phenomenon may also occur for short and long chain polymerizable sulfhydryl phospholipids.